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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,709	12/30/2003	Khosro Shamsaifar	WJT08-0057	2108

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06/20/2005

EXAMINER

PAN, YUWEN

ART UNIT	PAPER NUMBER
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2682

DATE MAILED: 06/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/748,709

Applicant(s)

SHAMSAIFAR ET AL.

Examiner

Yuwen Pan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/30/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-38 and 40-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-38 and 40-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/30/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 40-46 have been renumbered 39-45.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6, 15-20, 31-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagn (US 20020090974A1).

Per claims 1, 15, and 31, Hagn discloses an electronically tunable RF Front End Module (see figure 1, 12 and 13), comprising: an antenna for transmitting and receiving a plurality of RF signals (see figure 1 item A); a Diplexer High and low pass filter in communication with said antenna for distinguishing a plurality of groups of RF signals (see figure 1 items HDI1 and LD11); a second RF switch in communication with said first RF switch for switching between transmit and receive signals (see figure 1 item MS1); a low pass filter associated with said second RF switch for transmitting selected RF signals from said plurality of RF signals (see

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figure 1 and item SF1,2); a third RF switch in communication with said first RF switch for switching between transmit and receive signals (see figure 1 and item US1); and a low pass filter associated with said third RF switch for transmitting selected RF signals from said plurality of RF signals (see figure 1 and item SF3). Hagn's admitted prior art doesn't teach that a tunable band pass filter associated with said second RF switch for distinguishing received selected RF signals from said plurality of received RF signals and a tunable band pass filter associated with said third RF switch for distinguishing received selected RF signals from said plurality of received RF signals. Hagn's invention teaches that that a tunable band pass filter associated with said second RF switch for distinguishing received selected RF signals from said plurality of received RF signals (see figure 11 and item DUIO) and a tunable band pass filter associated with said third RF switch for distinguishing received selected RF signals from said plurality of received RF signals (see figure 12 and item SF3,4, column 5 and paragraph 50). It would have been obvious to one ordinary skill in the art at the time the invention was made to combine teaching of Hagn and Hagn's admitted prior art such that highly integrated filters and switch would be able to reduce the size of a 3G phone.

Per claims 2, 16, 32, Hagn further teaches that said unable band pass filter associated with said second RF switch for distinguishing received selected RF signals from said plurality of received RF signals, distinguishes between frequencies in the DCS and PCS bands (see paragraph 6).

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Per claims 3, 17, and 33, Hagan further teaches that low pass filter associated with said second RF switch for transmitting selected RF signals from said plurality of RF signals, selectively transmits signals in the DCS and PCS frequency bands (see paragraph 6).

Per claims 4, 18, and 34, Hagan further teaches said tunable band pass filter associated with said third RF switch for distinguishing received selected RF signals from said plurality of received RF signals distinguishes between frequencies in the GSM 800 and GSM 900 bands (see paragraph 5).

Per claims 5, 19, and 35, Hagan further teaches that said low pass filter associated with said transmitting selected RF signals from selectively transmits signals in the GSM 800 and GSM 900 frequency bands (see paragraph 5).

Per claims 6, 20, and 36, Hagan further teaches that variety of filters could be utilized for the inventive front-end circuit, for example, SAW filters (see paragraph 57), thus it is inherent that said tunable band pass filter associated with said second RF switch utilizes voltage tunable dielectric capacitors to enable tuning.

4. Claims 7-9, 21-23, 37, 38, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagan (US 20020090974A1) in view of Auken (US006150901A).

Hagan doesn't teach that said tunable band pass filter associated with said second RF switch utilizes MEM varactors to enable tuning, said MEM varactors use a parallel plate varactor topology, wherein said MEM varactors use an interdigital varactor topology. Auken discloses

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that a MEM switch utilizes MEM varactors to enable tuning, said MEM varactors use a parallel plate varactor topology, wherein said MEM varactors use an interdigital varactor topology (see column 3 and lines 15-25, column 5 and lines 41-47). It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching of Auken with Hagn's invention such that reduces the size and costs associated with multiple bandpass filters.

5. Claims 10-14, 24-30, 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagn (US 20020090974A1) in view of Yamakawa et al (US 20030068998A1).

Per claims 14, 28, and 44, Hagn doesn't teach that a duplexer associated with said second RF switch, said duplexer outputting an RF signal to a bandpass filter for transmitting a selected RF signal and receiving a selected RF signal from said bandpass filter. Yamakawa teaches that a duplexer associated with said second RF switch, said duplexer outputting an RF signal to a bandpass filter for transmitting a selected RF signal and receiving a selected RF signal from said bandpass filter (see figure 6, item 308). It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching of Yamakawa with Hagn's invention such that a cellular phone would be able to operate more than two different wireless communication systems.

Per claims 11, 12, 25, 26, 41, and 42, Hagan further teaches that said tunable band pass filter associated with said third RF switch utilizes semiconductor tunable varactors to enable tuning (see paragraph 153).

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Per claim 10, 13, 24, 27, 40, 43, Yamakawa further teaches that said tunable band pass filter associated with said third RF switch utilizes semiconductor tunable varactors to enable tuning (see paragraph 153-155).


Per claims 29, 30 and 45, Yamakawa further teaches that said selected transmitted RF signal and selected received RF signal is a signal in the UMTS frequency band (see paragraph 6).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuwen Pan whose telephone number is 703-305-7372. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Yuwen Pan  
May 2, 2005

  
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